

## DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

### RCRA Corrective Action

### Environmental Indicator (EI) RCRIS code (CA725)

#### Current Human Exposures Under Control

<b>Facility Name:</b>	Koppers Industries
<b>Facility Address:</b>	465 West 56 <sup>th</sup> Avenue, Denver, CO 80216
<b>Facility EPA ID #:</b>	COD007077175

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

<input checked="" type="checkbox"/>	If yes - check here and continue with #2 below.
<input type="checkbox"/>	If no - re-evaluate existing data, or
<input type="checkbox"/>	If data are not available skip to #6 and enter "IN" (more information needed) status code.

#### **BACKGROUND**

##### **Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

##### **Definition of "Current Human Exposures Under Control" EI**

A positive Current Human Exposures Under Control EI determination (YE status code) indicates that there are no "unacceptable" human exposures to contamination (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

##### **Relationship of EI to Final Remedies**

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

##### **Duration / Applicability of EI Determinations**

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be “**contaminated**”<sup>1</sup> above appropriately protective risk-based levels (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	X			pentachlorophenol, PAHs, dioxin
Air (indoors) <sup>2</sup>		X		
Surface Soil (e.g., <2 ft)	X			pentachlorophenol, PAHs, As, dioxin
Surface Water		X		
Sediment		X		
Subsurf. Soil (e.g., >2 ft)	X			pentachlorophenol, PAHs, As, dioxin
Air (outdoors)		X		

\_\_\_\_\_ If no (for all media) - skip to #6, and enter YE status code after providing or citing appropriate levels, and referencing sufficient supporting documentation demonstrating that these levels are not exceeded.

X If yes (for any media) - continue after identifying key contaminants in each contaminated medium, citing appropriate levels (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

\_\_\_\_\_ If unknown (for any media) - skip to #6 and enter “IN” status code.

**Rationale and Reference(s):**

The surface and subsurface soil contaminants of concern at the site are pentachlorophenol (penta), polynuclear aromatic hydrocarbons (PAHs) expressed in benzo(a)pyrene toxicity equivalents (BAP TEQ), arsenic, and dioxins/furans expressed in TCDD toxicity equivalents. The risk based standards for soil, based on continued industrial use and institutional controls are: 42 mg/kg penta, 1.2 mg/kg BAP TEQ, 19 mg/kg arsenic, and 0.003 mg/kg dioxin TEQ. The selected soil remedy for the site includes installing engineered covers over impacted areas to bring the area specific risk concentrations down to  $1 \times 10^{-5}$  under an industrial use scenario. Remedy protectiveness will be maintained under an environmental covenant.

Groundwater contaminants of concern include penta and PAHs. The dissolved phase groundwater plume consists primarily of penta contamination, with elevated concentrations of PAHs generally occurring only in the vicinity of non-aqueous phase liquids (NAPLs). Detectable concentrations of dioxins have not been observed in the dissolved phase plume, but are assumed to be a component of the NAPL. The groundwater standards for the site are the Colorado Basic Groundwater Standards: 1.0 ug/l penta, and compound specific concentrations for PAHs ranging from 0.0048 ug/l to 28 ug/l. The groundwater remedy includes a subsurface barrier wall, onsite insitu biological treatment, NAPL recovery, insitu chemical oxidation and monitored natural attenuation.

**Footnotes:**

<sup>1</sup> “Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

<sup>2</sup> Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggests that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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3. Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

<b>Contaminated Media</b>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food <sup>3</sup>
Groundwater	no	no	no	yes	no	no	no
Air (indoors)	—	—	—				—
Soil (surface, e.g., <2 ft)	_ no _	yes	no	yes	_ yes	no	no
Surface Water	—	—			—	—	—
Sediment	—	—			—	—	—
Soil (subsurface e.g., >2 ft)	no	no	no	yes	no	no	no
Air (outdoors)	—	—	—	—	—		

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not “contaminated” as identified in #2 above.
2. enter “yes” or “no” for potential “completeness” under each “Contaminated” Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media - Human Receptor combinations (Pathways) do not have check spaces (“\_”). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

— If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter “YE” status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

X — If yes (pathways are complete for any Contaminated Media - Human Receptor combination) - continue after providing supporting explanation.

— If unknown (for any Contaminated Media - Human Receptor combination) - skip to #6 and enter “IN” status code.

Rationale and Reference(s):

Exposures to contaminated surface soil is possible for onsite workers, construction workers and trespassers; however, the possible exposure to trespassers is low since the facility is partially fenced and employees are on site 24 hours a day. Exposure to contaminated subsurface soil and groundwater is also possible for construction workers who may excavate in areas with soil and groundwater contamination. No private or municipal wells have been impacted by the groundwater contaminant plume; therefore, exposure to contaminated groundwater is limited to dermal exposure during excavation.

<sup>3</sup> Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be “**significant**”<sup>4</sup> (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the contamination); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?

X      If no (exposures can not be reasonably expected to be significant (i.e., potentially “unacceptable”)  
—      for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining  
and/or referencing documentation justifying why the exposures (from each of the complete  
pathways) to contamination (identified in #3) are not expected to be significant.

—      If yes (exposures could be reasonably expected to be significant (i.e., potentially “unacceptable”)  
for any complete exposure pathway) - continue after providing a description (of each potentially  
unacceptable exposure pathway) and explaining and/or referencing documentation justifying why  
the exposures (from each of the remaining complete pathways) to “contamination” (identified in  
#3) are not expected to be “significant”.

—      If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

**Rationale and Reference(s):**

Although the selected soil remedy (engineered covers) has not yet been constructed, a large percentage of the areas of concern are currently covered by existing asphalt or concrete surfaces, gravel which is replaced as necessary, or covered with stacks of untreated wood that are left to air dry for 6-9 months. See the attached risk evaluation based on current conditions at the facility.

It is anticipated that the final soil remedy will be installed in a phased manner as the stacks of untreated wood are moved for treatment. After final remedy construction is completed, possible exposures will be reduced to acceptable levels for the current and planned use of the property, in accordance with the approved Statement of Basis (EPA 2004) and Corrective Measures Study Report (GeoTrans, July 2, 2001; revised December 3, 2003). The final remedy and use restrictions will be maintained under an environmental covenant.

In the areas that are not currently covered, exposure is being reduced or eliminated by using safe work practices and appropriate personal protective equipment. Koppers has implemented a Hazard Communication Program and a PPE Hazard Assessment Program at the facility to reduce exposures to employees and contractors to hazards and contaminants on the site, including contaminated soil and groundwater. Current exposures to onsite workers and construction workers are adequately controlled under these programs. The possibility of exposure to trespassers is low since the facility is partially fenced and employees are on site 24 hours a day.

Installation of the groundwater remedy is complete, and remediation is ongoing. The only potential exposure pathway is dermal exposure to construction workers that may perform excavations in areas of contaminated groundwater. As discussed above, exposure to construction workers is adequately controlled under the Hazard Communication Program and the PPE Hazard Assessment Program implemented by Koppers.

<sup>4</sup> If there is any question on whether the identified exposures are significant (i.e., potentially unacceptable) consult a human health Risk Assessment specialist with appropriate education, training and experience.

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5. Can the significant **exposures** (identified in #4) be shown to be within **acceptable** limits?

\_\_\_\_\_ If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

\_\_\_\_\_ If no (there are current exposures that can be reasonably expected to be “unacceptable”)- continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.

\_\_\_\_\_ If unknown (for any potentially unacceptable exposure) - continue and enter “IN” status code

Rationale and Reference(s):

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

X — YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, Current Human Exposures are expected to be Under Control at the Koppers Industries facility, EPA ID # COD007077175 located at 465 West 56<sup>th</sup> Avenue, Denver, Colorado under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

— NO - "Current Human Exposures" are NOT "Under Control."

— IN - More information is needed to make a determination.

Completed by	(signature)		Date	
	(print)	Colleen Brisnehan		
	(title)	Environmental Protection Specialist		

Supervisor	(signature)		Date	
	(print)	Walter Avramenko		
	(title)	Corrective Action Unit Leader		
	(EPA Region or State)	Colorado		

Locations where References may be found:
Colorado Department of Public Health and Environment Records Center 4300 Cherry Creek Drive South Denver, Colorado 80246-1530 303-692-3331

Contact telephone and e-mail numbers

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**FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.**